

MAKING REVENUE PROTECTION UNITS A
SELF-FUNDING VALUABLE SOURCE OF REVENUE

23 - 24 AUGUST 2018

Hosted by The City of Cape Town



Southern Africa Revenue
Protection Association



For more information please visit sarpa.co.za

Ghost Vending

The illegal selling of prepaid electricity

South African Revenue Protection Association Cape Town 2018
Harold Hayes

Millions being lost everyday

Eskom loses R350m to 'ghost vending'

Pretoria News 2014 - Power utility Eskom loses millions of rand a year because of illegal buying and selling of prepaid electricity vouchers. Estimated R350 Million per year

Illegal buying and selling of prepaid electricity is called ghost vending, and Eskom's senior manager for energy trading, Maboe Maphaka, says the utility loses at least R350 million a year to the practice.

'Ghost vending': A South African reality for ESKOM and **Municipalities**

Many Municipalities believe that this is only a ESKOM problem but "This is Incorrect"

Ghost vending is costing Millions

Ghost vending is the illegal sale of prepaid electricity tokens from a Point Of Sale that has previously been stolen.

Reason for Ghost vending and delayed solutions to the problem

1. **Utility legacy solutions**, “stand alone vending terminals or off line vending terminals” that have been stolen are the main cause for Ghost vending.
2. Municipalities **not recovering or managing encryption modules**
3. Sadly Municipalities are still **purchasing Stand Alone units** and specifying these terminals in tenders
4. Suppliers are still selling “stand alone terminals”
5. Meters that are installed with no valid address or point of connection (**upfront vending**)
6. **Meter audits, incomplete**, incorrect or poor information collected during audits
7. **Senior council members not buying-in**, we need to lead from the top and get SAP involved

STS Key Management / Token Encryption (reminder)



Allocation of unique
Supply Group Codes (SGC)
for each utility

Utility authorises STS key
management to issue the
production keys for its
selected vendor

STS Key
Management
Centre



Factory personalization
(Decoder Key)

Systems Vendor
(Encoder Key)



Encode

Tax Number :	123456
2001/11/02	03:11:01 PM
Receipt Number :	41/2395
Meter Num	07 021834010
MR D LESEJANE	
P00177	
P00177	
<u>Electricity Credit</u>	
Token Number :	1
+ 5243 0772 6286	
5169 4887	
4647791	
Supply Group Code	100202
Tariff Index :	03
Key Revis io	1
Tariff Charge : Std Block	
Total Units (kWh) :	50
Value :	R 14.38
Tariff Charge : R 14.38	

Decode



TID ROLLOVER

Finally, a solution to eradicate ghost vending and get funding for this!



The graphic features a dark blue background with a collage of images at the top: a power line tower against a sunset, a close-up of a gas valve, and a hand holding a globe with a city skyline. Below the images, the text 'TID ROLLOVER COUNTDOWN' is written in white. To the left, a clock face shows the 'Deadline: 2023' with the words 'Trusted Secure' above it. In the center, the 'STS ASSOCIATION' logo is displayed, consisting of a stylized blue 'S' and the text 'STS ASSOCIATION' below it, with the tagline 'Simple • Trusted • Secure' underneath. At the bottom, the text 'THE STS 6 HAS BEEN OFFICIALLY RELEASED.' is written in white, followed by 'The TID Rollover Implementation can now commence.' in a smaller font. The background of the bottom half of the graphic shows a power line tower against a sunset sky.

TID ROLLOVER COUNTDOWN

Trusted Secure
Deadline:
2023

STS ASSOCIATION
Simple • Trusted • Secure

THE STS 6 HAS BEEN OFFICIALLY RELEASED.
The TID Rollover Implementation can now commence.



Utilities

- **Plan** the TID rollover program
- Ensure **completion** before the critical date of 24/11/2024.
- **Communicate** the plan, and reasons for the program, to all regions within the utility.
- Upgrade all **vending installations** to software that supports the rollover functionality and relevant database changes.
- Upgrade utility **software** to ensure that it supports the new Nedisys file format, where Nedisys is used as an import tool.
- Upgrade/purchase **secure modules** with rollover functionality through the secure module supplier. **Manage and eliminate old modules**
- Upgrade **KMC** software, where this is owned by a utility, to cater for multiple base dates.

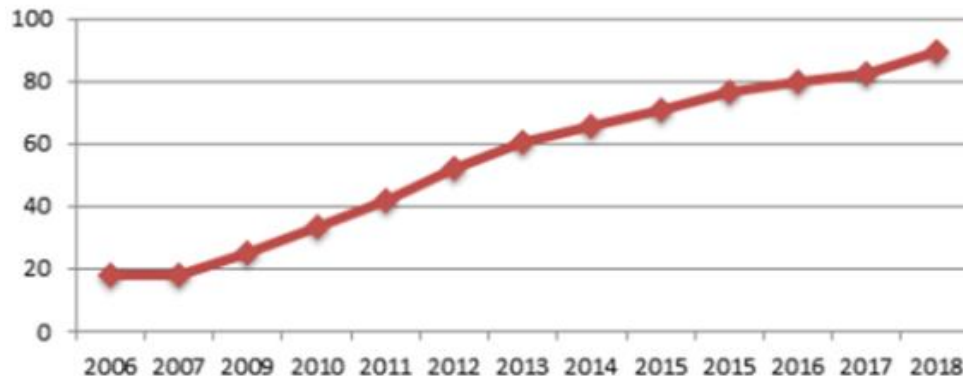
Use Case and factors to consider (Analytics)

Local Municipalities should see a steady increase in revenue

One example Local council numbers

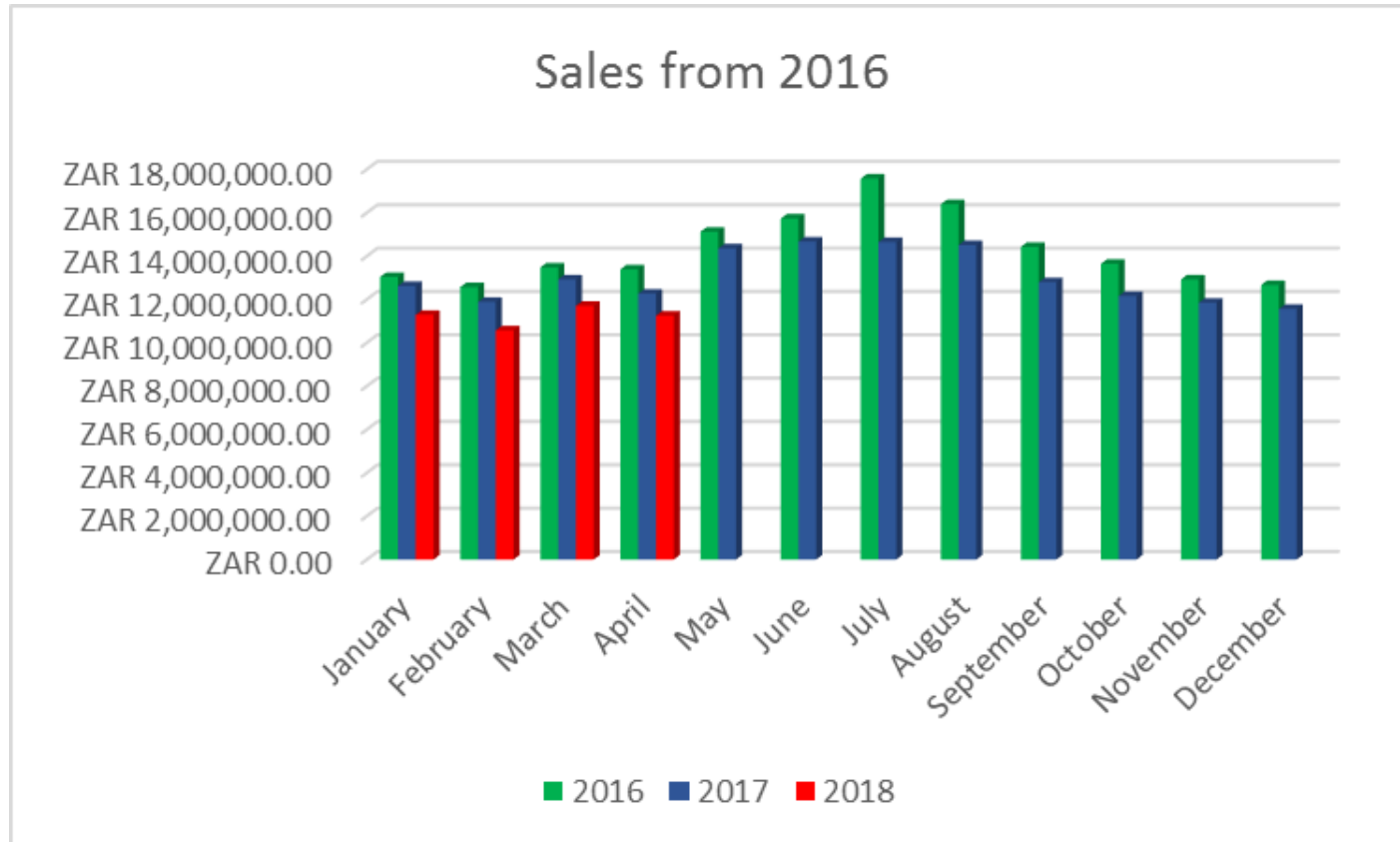
- The city has +/- 52 000 prepayment meters in the field
- New meter installations @ approximately 9% per year
- Electricity price increases

Electricity prices, 2006-2018, Rands



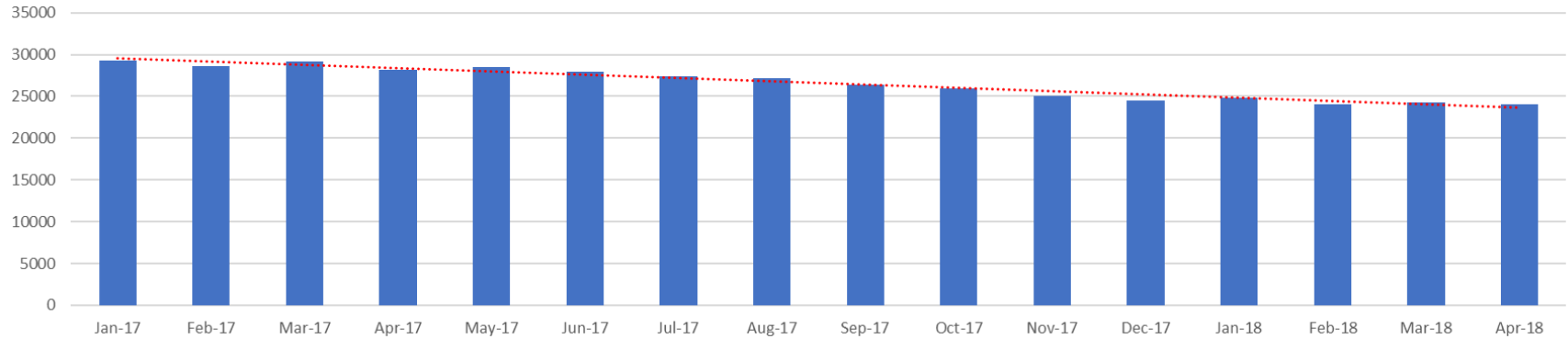
Actual Monthly Sales Graph (2016-2018)

Why are the revenue not increasing?

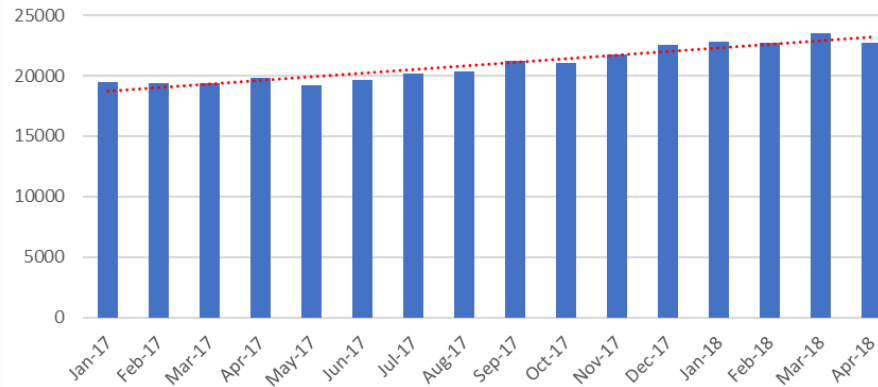


Evaluate Transactional Trends

Total number of customers who have purchased monthly

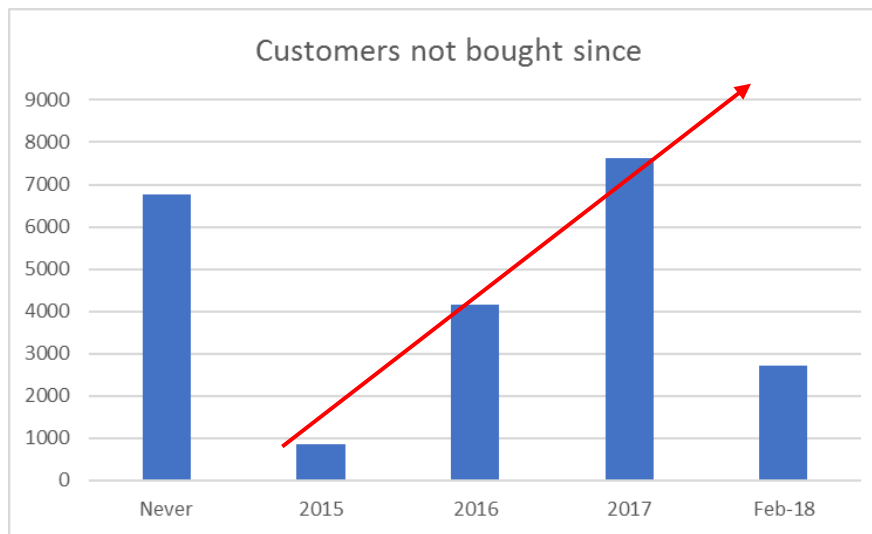


Number of meters with zero sales per month

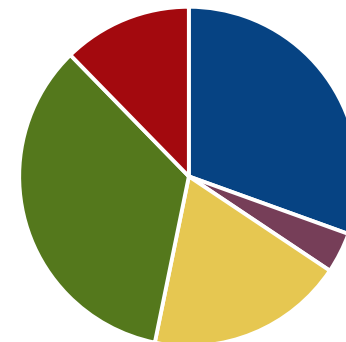


Used Case Municipal data analyses

Period from	# of customers
Never	6755
2015	857
2016	4170
2017	7634
Feb-18	2725
	22141



Customers not bought since



■ Never ■ 2015 ■ 2016 ■ 2017 ■ Feb-18

Actual Field Results after investigation

Inspect	Meter Number	Stand number	Area	Last Transaction	Units on Meter	Problem Found	Solution
1	1022922xxx	2305	Hidden	Not Available	0	Bypass, Direct connection, wrong meter 07124568471	Cut off
2	1352331xxx	2349	Hidden	21-03-17		Bypass, Direct Connection. No meter connected	Cut off
3	1317446xxx	2036	Hidden	11-09-17	1048.35	Ghost vending	SGC key change Done on meter and cut off
4	1079629xxx	2296	Hidden	03-02-17	50	Ghost Vending	SGC key change Done on meter and cut off
5	1023022xxx	2344	Hidden	11-09-17	157.78	Ghost Vending	SGC key change Done on meter and cut off
6	1023743xxx	2336	Hidden	20-01-16	517.29	Ghost Vending	SGC key change Done on meter and cut off
7	1351199xxx	2327	Hidden	08-03-17	344.93	Ghost Vending	SGC key change Done on meter and cut off
8	1023114xxx	2323	Hidden	18-08-17	593.14	Ghost Vending	SGC key change Done on meter and cut off
9	1351199xxx	2318	Hidden	05-11-16	190.84	Ghost Vending	SGC key change Done on meter and cut off
10	1027659xxx	2304	Hidden	Not Available	0	No Access	Revisit Scheduled
11	1023026xxx	2338	Hidden	16-07-16	0	Access denied	Revisit Scheduled
12	1023041xxx	2331	Hidden	04-03-17	0	Access denied	Revisit Scheduled
13	1022990xxx	2333	Hidden	20-01-17	0	Access denied	Revisit Scheduled
14	1080395xxx	2319	Hidden	Not Available	0	No Access	Revisit Scheduled

Pictures from Field



Reasons identified decrease in revenue

- 6700 Meters that were installed or had been replaced, these meters have **no transactions on the municipal Vending system**. (possible inside job)
- Meters reported **faulty** or with issues > bypassed and never resolved
- Increase in **Bypassed Meters** (tampering is like cancer, once it starts spreading its difficult to control)
- Ghost vending (from legacy systems and previous off-line vending terminals)
- **Community has the power** to keep the council out. Threats of burning cars, buildings and even eliminating individuals.

Proposal on the way forward

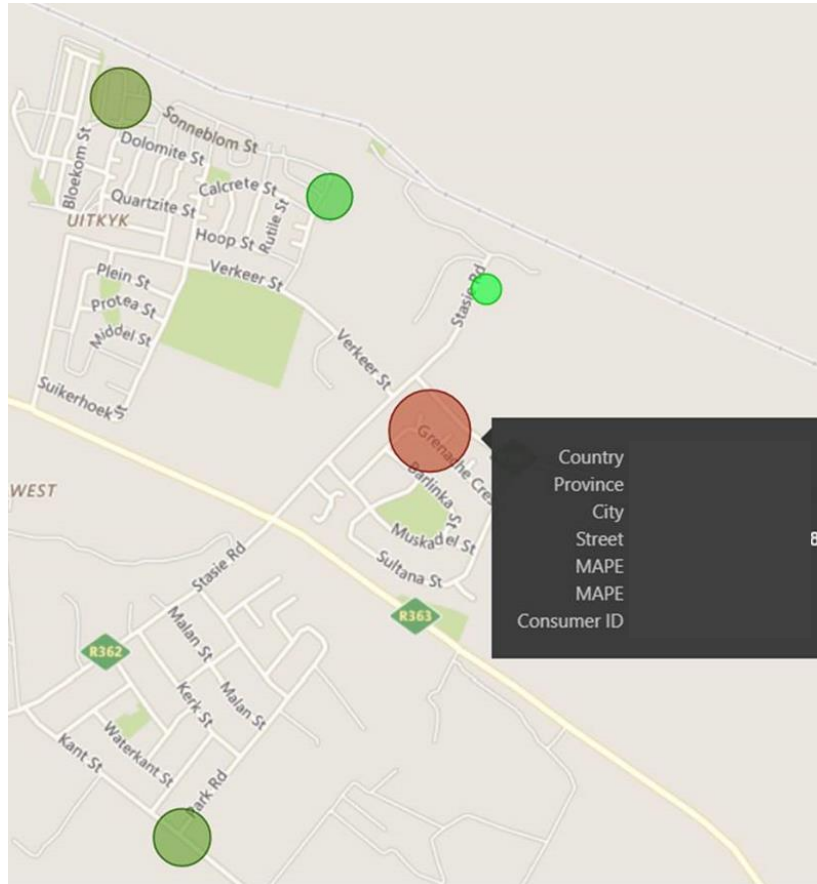
1. **Ensure the following steps are followed**
 - **Get Council and political buy-in before starting the program**
 - **Marketing campaign, inform customers. Use all media formats, run the campaign for at least 2 months**
2. **Identify suspect meters** which are not purchasing and those identified with low purchase patterns. All Information should be extracted from the vending system and analysed.
3. **PLOT areas** with abnormal purchase patterns. Create a plan of action, move from area to area, do not remain in one area for a long time.
4. While auditing the identified customers:
 - Collect all relevant data using **online tools** and update back office system (no papers)
 - Issue **Fines** when required, possible amnesty period could be considered
 - **Normalize** installations, record information
 - **Key change all meters** to new SGC start implementing the TID roll over process
5. Correct the problem in the field using **online STS engineering tokens** e.g. clear tampers, clear “Ghost” Credit
6. **Ungently get the SAP involvement in the Investigation, identification and shut down ghost vendors**
7. **Continue to monitor** and analyse future buying patterns using simple dashboards

Examples of Reporting/Analytics (Suspicious Buying Patterns)

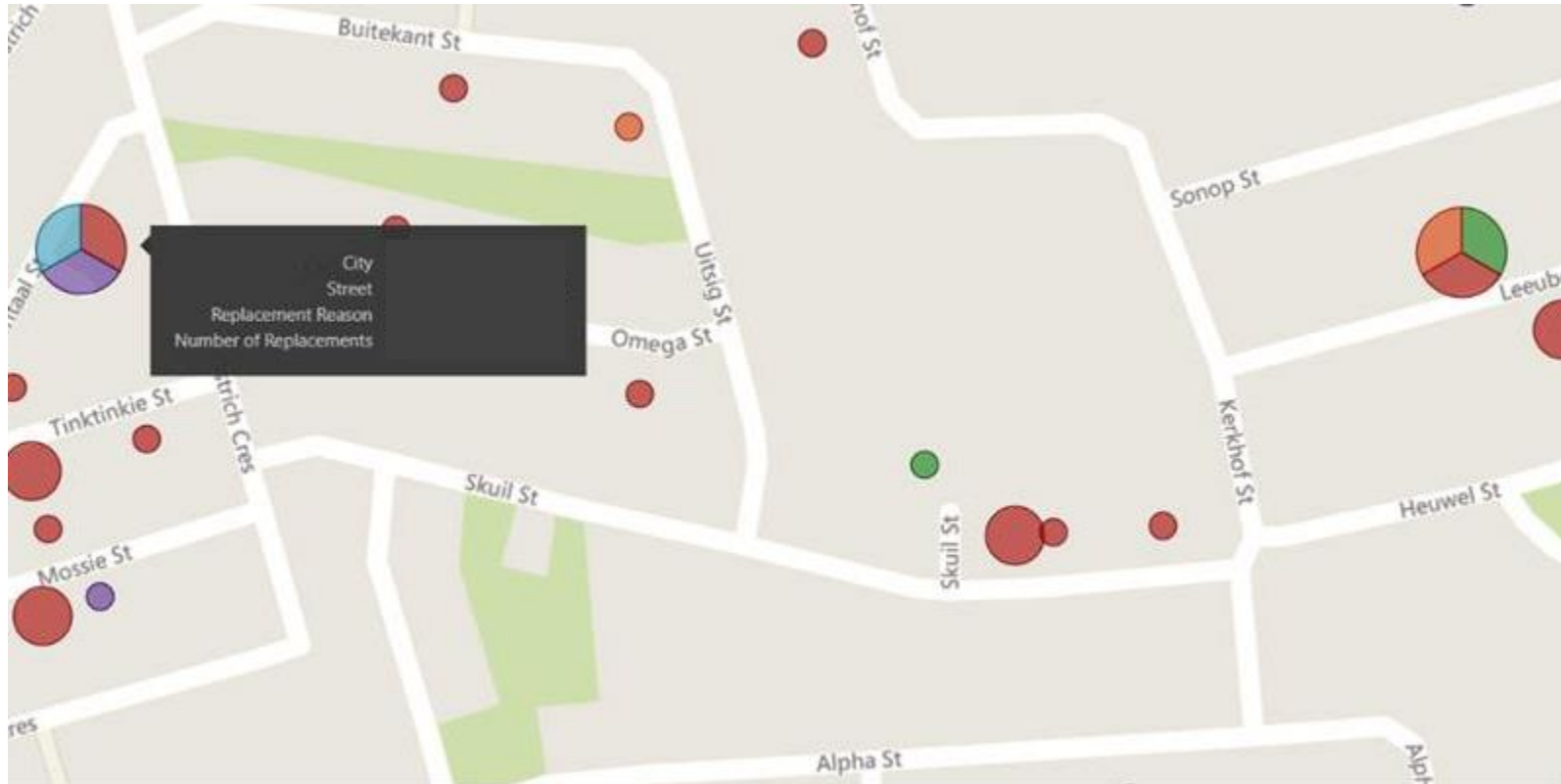
Examples

Compare customers data in the area

Regularity of purchasing

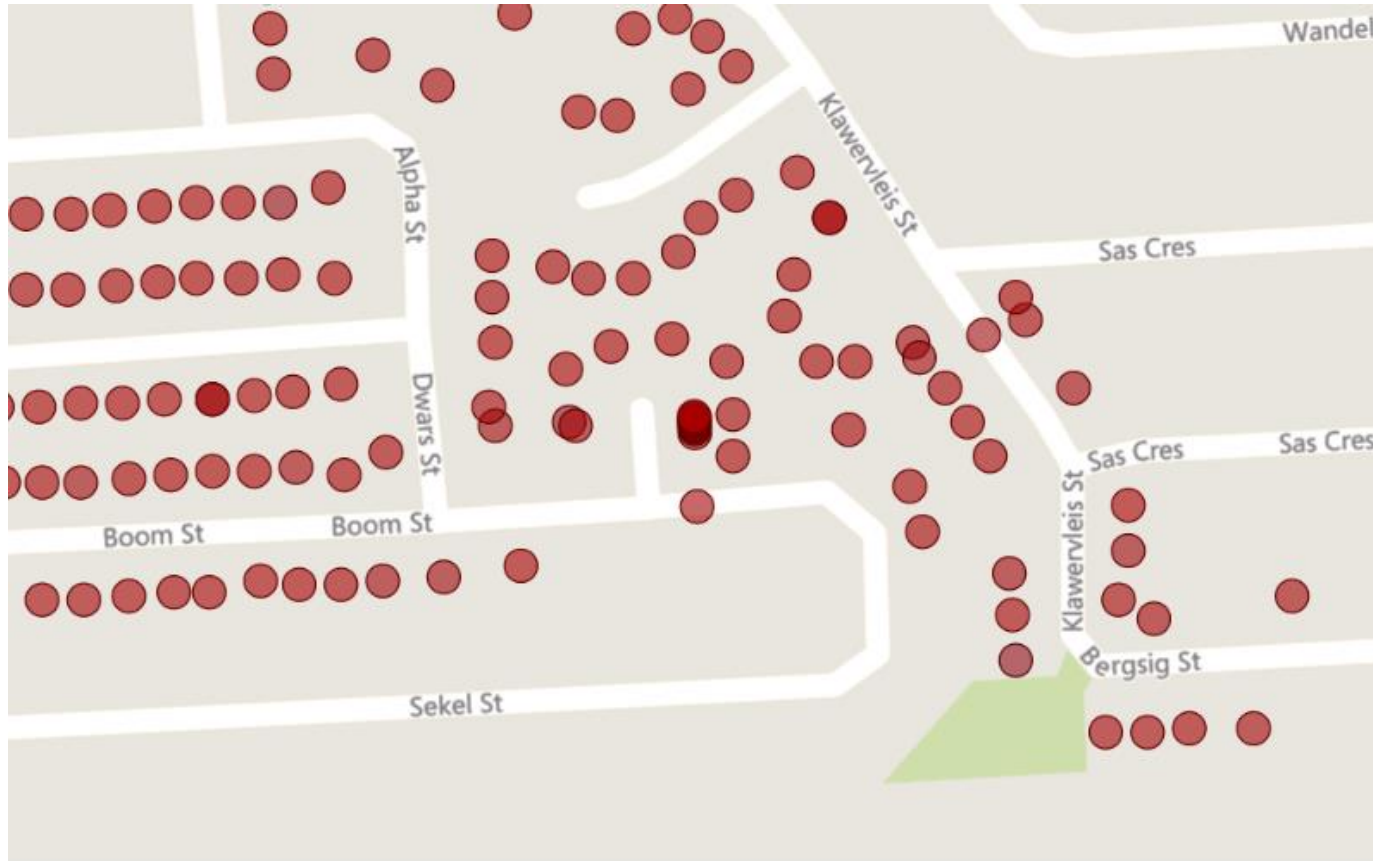


Examples of Reporting / Analytics (Meter Defects and Potential Tampering)

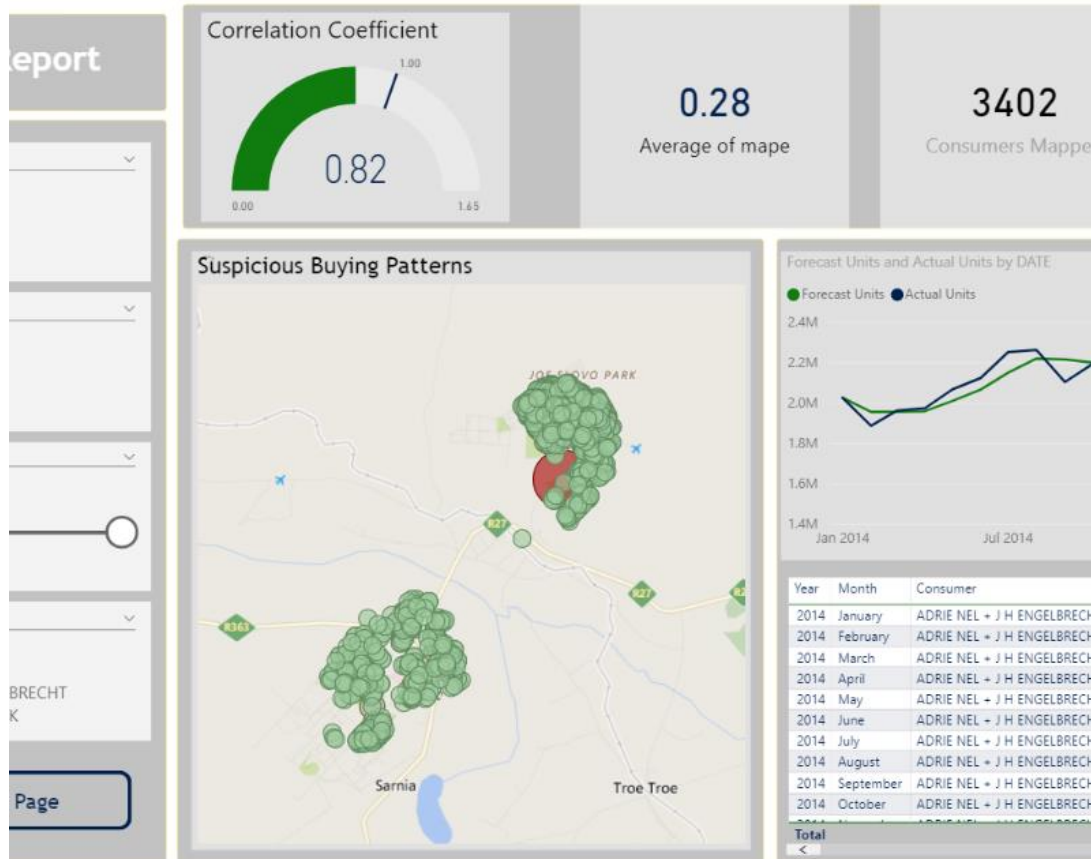


Monitor customers that have repeat defects or complaints

Examples of Reporting / Analytics Areas with low energy consumption)



Examples of Reporting / Analytics (Statistics Dashboard)



All vending systems should be **online**, with out exception

Stand alone terminals should **never be purchased** or specified. SMS vending should be used when networks are weak.

All meters installations should have three credentials

1. Point of connection (this must be linked to location)
2. Meter Number
3. Customer name

Manage all security modules, this must become a audit item. Devices not used should be sent back to suppliers or locked in a safe

Actively monitor the solution, **prepayment works for everyone**

GHOST VENSING IS ILEGAL, this equates electricity theft

There remains a perception that nobody can be arrested for stealing electricity

In reality though, as shown in many cases now, if you steal electricity, you will get caught and you could face a jail sentence.

The message needs to be spread and not only by ESKOM

Thank You for your attention

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Harold Hayes